DOCUMENT RESUME

ED 263 027 SO 016 506

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TITLE World Food Security and Insecurity, 1984-2000.
PUB DATE Mar 85
NOTE 18p.; Paper presented at the Annual Convention of the International Studies Association (26th, Washington, DC, March 5-9, 1985). For related document, see SO 016 505.
PUB TYPE Viewpoints (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Agricultural Production; *Agricultural Trends; Developed Nations; Developing Nations; Economic Development; Economic Factors; Economic Progress; *Food; *Futures (of Society); *Hunger; Nutrition; Population Growth; Population Trends; Poverty; Productivity; *World Problems
IDENTIFIERS Supply and Demand

ABSTRACT

Effective economic demand, rather than resource constraints, will continue to be the dominant limiting factor in improving the security of world food supplies between now and the year 2000. The global demand for food will continue to grow but the rate of growth is declining in virtually all regions, easing the pressure on agricultural resources. The largest relative increases will be in the developing world while demand in the developed world is leveling off because of low population growth and the approaching satiation of demand for livestock products. All regions except Sub-Saharan Africa will meet the increased demand for food supplies out of increased domestic production. In the developing countries, population growth and productivity growth will set the pace for food consumption. In most of these countries, sustained and balanced economic growth will not be possible without a strong emphasis on agriculture. In low income countries, major efforts to increase food production are essential. The greatest improvements in food consumption are predicted for North Africa, the Middle East, and East Asia. Market instability is likely to remain a serious problem as is chronic undernutrition among the poorest peoples. (LP)

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WORLD FOOD SECURITY AND INSECURITY, 1984-2000

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Washington, D.C.

March 1985

SP 016 506

Paper presented at the Annual Convention of the International Studies Association (26th, Washington, DC, March 5-9, 1985).

World Food Security and Insecurity, 1984-2000*

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Much progress has been made since the World Food Conference of 1974 in building world food systems to meet the needs of an expanding world population. Large-scale capital investments in production systems infrastructure and research have increased productivity and productive capacity in many parts of the world. Human capital has been enhanced through education. Agricultural production and trade have grown impressively on a global basis. The specter of widespread, chronic future global food and resource scarcity so prominent in the literature of the 1970s, has given way to cautious optimism for at least the remainder of the century.

Even under the most optimistic scenario, however, future prospects must be tempered with uncertainty. Food production will continue to be unstable in the short run. Prospective agricultural and economic growth patterns among countries and regions of the world are highly uneven. Government policies instrumental to sustained improvement of global food systems are likely to continue to be erratic and ambivalent.

The decade since the World Food Conference also has brought about changes in perception as to the underlying causes of the world food problem and a greater appreciation of the need for multiple, comprehensive

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*Presented at 26th Annual Convention of the International Studies Association, March 5-9, 1985, Washington, D.C. This paper draws heavily from the paper of my colleague at Resources for the Future, Fred H. Sanderson, published as "World Food Prospects to the Year 2000" in Food Policy, November 1984, Butterworth & Co. (Publishers) Ltd., London.

approaches to enhance world food security. Increasing food production in the developing countries continues to be a valid, essential objective, but it is no longer thought to be a sufficient condition for increasing food consumption among the poor and enhancing global food security. Agricultural development and food security are seen more broadly as an integral part of the problem of economic development. The hunger problem is seen more clearly as the result of low economic productivity and consequent lack of purchasing power, not just food availability.

Finally, we no longer look at the Third World as a uniform bloc of poor countries. We have learned to distinguish between rapidly developing high- and middle-income developing countries and slowly developing low-income countries. We have seen impressive improvements in food consumption in both the high- and middle-income countries. In many of these countries, domestic food production, although increasing at respectable rates, could not keep up with the rapidly growing demand. It is this group of countries which accounts for the large increase in the food deficit of the developing countries. Contrary to expectations, their imports were financed, with relative ease, by increased exports not only of oil but of a wide variety of manufactured and agricultural products (and to some extent, regrettably, by relying on easily available international credit).

Paradoxically, many low-income countries performed rather well by the self-sufficiency standard: these countries as a group did not increase their food imports significantly. Nevertheless, it is the low-income countries that should be cause for continuing concern because balance has been achieved only at low levels of food consumption.

Within these broad categories, some regions and countries have done distinctly better than others in increasing food consumption. Countries that have provided incentives for production and private investment and adequate public funds for agricultural development have been more successful in increasing food production than those that failed to do so. Countries unable to stem rapid population growth found it more difficult to improve or even maintain per capita food consumption levels; this has been a major factor in the decline of per capita food consumption in much of Sub-Saharan Africa.

Countries with limited agricultural resources have been able to improve their food consumption and food security by relying on imports for some of their staple food requirements and by paying for the imports by exporting agricultural and manufactured products in which they have a comparative advantage by virtue of their resource endowment or ample supply of low-cost labor. As a general rule, countries choosing the path of international interdependence have done better in attracting foreign investments and in speeding up economic growth than countries that adopted an inward-looking development strategy. By the same token, however, the outward-looking economies have become more vulnerable to disruptions in international trade and capital flows.

The hope expressed at the World Food Conference that hunger could be eradicated within a decade has not been fulfilled. Certainly, progress has been made in dealing with famines due to crop failures, wars, or civil disturbances. This is due, in part, to improvements in communication and transportation, the development of the international grain trade, more adequate storage facilities, and the fact that national governments, intergovernmental institutions, and private charitable organizations are

better organized to provide prompt relief. Even so, international relief efforts have been unable to prevent widespread starvation in the Sahel.

The problem of chronic undernutrition has proved to be even more intractable. In theory, there is enough food in most low-income countries to provide an adequate diet for all. In this sense, the problem is one of distribution. Hundreds of millions of people, both rural and urban, are too poor to afford even a minimum diet necessary for a normal level of activity; and they are concentrated in countries, areas or economic sectors with low rates of productivity growth. And, income distribution in developing countries is highly resistant to change.

Another approach to enhancing food security is through food assistance programs. Many countries subsidize food consumption by the poor. Special programs are directed toward vulnerable groups such as pregnant and nursing mothers, infants, and school children. In some countries, food-for-work programs attempt to combine nutritional benefits with employment and development objectives. Many of these programs are supported by international food aid. Here again, the problem appears to be technically manageable: it would take no more than 35 million tons of grain, or 2.4 percent of world grain production, to bring 400 million undernourished people up to a standard of 2200 calories. The problem is not only to mobilize the necessary resources, but also to target food assistance to the people who need it most.

In the absence of increased redistributive intervention, reliance must be on general economic growth for the solution of the hunger problem: in time, the rising tide will lift all boats. But for too many people, the tide has been slow in arriving. Studies by the World Bank concluded that even assuming no adverse shifts in income distribution, and no increase in

the real price of food, it would take between 20 and 50 years to eliminate hunger in the normal course of economic development.

Circumstantial evidence suggests that these estimates may be unduly pessimistic. Official statistics seem to understate food availabilities and, especially, food consumption by the poor, in many developing countries. To the extent that this is true, the size of the problem and the time it will take to cure it may be overestimated. In the absence of reliable evidence, however, it is probably safe to assume that the situation has not changed a great deal in the past ten years.

1. Projections to the Year 2000

About a year ago, the National Center for Food and Agricultural Policy at Resources for the Future published a comprehensive reassessment of global food prospects to the year 2000. In the remainder of my remarks I will summarize our findings as reported by Sanderson in a recent article in Food Policy. I will then conclude with some implications of these projections for world food security and insecurity.

Demand

Our projections recognize effective economic demand as the driving force in the expansion of global food systems. That demand will continue to grow, but at a slower rate than in the 1970s. For cereals, the annual rate of increase is projected at 1.8 percent, down from 2.6 percent in the 1970s. For oilseeds, the projected rate of growth is 2.3 percent, down from 3.8 percent; for meat, 2.4 percent as compared with 3.1 percent; for milk, 1.5 percent as compared with 1.7 percent.

The trend factors responsible for this slow-down are reduced rates of population growth (except in Sub-Saharan Africa), slower income growth and

declining income elasticities of demand for food, especially the approaching satiation of demand for livestock products in the affluent countries. In addition, balance-of-payments constraints are likely to be more severe, particularly for Latin America and Eastern Europe, than in the "easy credit" 1970s. These factors, taken together, will more than offset the positive effects on the rates of growth of food demand of the dietary transition toward increased livestock consumption in the middle-income, newly industrialized countries.

Despite the reduced rates of growth, the prospective absolute increases in aggregate demand are very large. World demand for meat is projected to increase by 64 percent, for milk by 36 percent, for grains by 46 percent, and for oilseeds by 62 percent. The largest percentage increases will be in the developing world, including China. Demand in the developed world, including the USSR and Eastern Europe, is leveling off because of low population growth and the near satiation of demand for livestock products.

Production

Detailed examination of land and water resources and of the possibilities of raising yields by increased applications of inputs and technology suggests that all regions except Sub-Saharan Africa may be expected to meet the increased demand largely out of increased domestic production. While the rates of growth of demand are particularly large in some of the developing regions, these are also mainly the regions where technology has been lagging and the potential for productivity growth is, therefore, relatively great. Realization of this potential will require massive investments in land improvement, irrigation, research, and extension; adequate inputs of fertilizer, pesticides, improved seeds;

improved marketing and storage facilities, and adequate economic incentives.

Cereals are most important since they account for about three-quarters of the world's crop area and production. The projected annual rate of increase in production is 1.8 percent--significantly less than the 2.6 percent annual growth experienced in the 1970s. Most of the increase in production will come from improved technology rather than additional land, as has been the case for the past several decades; indeed, area expansion is expected to contribute only 15 percent of the production growth, as compared with 25 percent in the 1970s. In absolute magnitude, the harvested grain area, which increased by 46 million hectares in the 1970s, is projected to increase by 40 million hectares in the years 1980-2000.

Above average rates of growth of grain production are projected for Oceania, East and South Asia, Latin America, North Africa/Middle East, other Western Europe, and the USSR, but only in the last three of these regions does this represent an acceleration from the 1970s. For North America, the projected rate of growth is less than half that experienced in the past decade. Only two regions--North Africa/Middle East and East Asia--are expected to increase cereal area more rapidly than in the 1970s.

The chief uncertainty concerns the USSR, where yields declined signficiantly in the 1970s. Increasing experience in the new lands and investment in better varieties and practices are expected to halt that trend, and yield increases greater than the world average are expected over the next two decades. Even with the projected increases, yields in the USSR would continue below the world average. They were 22 percent below average in 1969-71, 33 percent below in 1979-81, and are projected to be about 24 percent below in 2000.

Both South Asia and the Asian centrally planned (ACP) economies have had success in increasing yields through improved varieties and practices. While the ACP is not likely to be able to match over the next two decades the very great increases of the past few years, both regions are expected to continue to invest in yield-improving varieties and production inputs, and to continue significant increases until the end of the century.

Trade

In most regions of the world, production growth will continue to fall short of the growth in demand. The projections show increased dependence on grain imports from North America and Australia, oilseeds from the USA, Brazil, and Argentina, and meat from Oceania and Western and Eastern Europe. Aggregate regional net imports are projected to increase by 200 percent for meat, 60 percent for dairy products, 85 percent for cereals, and 52 percent for oilseeds. The most rapidly growing markets will be in East Asia and North Africa/Middle East. Massive food aid will probably be required if Sub-Saharan Africa is to cover its rapidly growing grain deficit, which is projected to reach 29 million tons by the end of the century.

Food consumption

Average food consumption levels are likely to improve in all regions except Sub-Saharan Africa. The prospective changes are relatively small, except for fairly rapid increases in per capita meat consumption in North Africa/Middle East, East Asia, the ACP, Latin America and Southern Europe, which continue an already established trend in these predominantly middle-income countries. Average per capita milk consumption will continue to decline on a global basis, but only because of the increased weight of the low-consuming developing world. Per capita consumption is leveling off

in the affluent countries, but significant increases are projected for North Africa/Middle East, South Africa, the ACP, and Latin America. Increases in per capita consumption of cereals (including feed and industrial use) are expected to be less than those experienced in the 1970s.

Undernutrition

The per capita income growth rates projected for the low-income countries of South Asia (1.5 percent) and Sub-Saharan Africa (-0.25 percent) do not bode well for significant improvements in the nutritional status of the world's most needy people. In fact, large increases in economic assistance probably will be required in Sub-Saharan Africa if a serious deterioration is to be avoided in that region. Hopes for a substantial reduction in chronic undernutrition will continue to rest largely on targeted food assistance and employment-oriented economic development programs.

Market instability

Instability is likely to remain a serious problem for the world grain markets and a recurrence of conditions similar to those in the mid-1970s is a distinct possibility. The causes of market instability are rooted in the food policies of the major grain-trading countries and are, in principle, amenable to remedial action. Year-to-year fluctuations in world supply and demand are relatively small and could easily be absorbed, without significant price effects, if there was a unified world market in which at least the all-important grains could flow freely in response to temporary imbalances. But this is not the case. Most countries pursue national stabilization policies which prevent international adjustments. This means that the USA and a few other economies that remain comparatively open to

the world market have to absorb a large--and increasing--part of any fluctuations in the world demand-supply balance.

Greater market stability could be acheived if the USA adopted a policy of holding large stocks, as was the case in the 1950s and 1960s. But budget costs militate against this. Every time U.S. stocks approach levels that might be considered adequate to meet a series of major crop shortfalls, such as those experienced in the 1970s, acreage controls are introduced to reduce the unwanted surplus. Negotiations mandated by the World Food Conference that aimed at sharing the responsibility for maintaining buffer stocks of wheat among the major trading nations failed when the market turned around. It will probably take another global "food crisis" to revive governmental interest in multilateral buffer stocks programs.

Some progress has been made in the meantime in helping developing countries deal with year-to-year fluctuations originating at home or abroad. The compensatory financing facility of the International Monetary Fund has been expanded to cover balance-of-payments problems caused by abnormally large grain import expenditures. Food-aid commitments were increased under both the Food Aid Convention (FAC) and the World Food Programme (WFP). An emergency reserve has been set up under the WFP, and Article IV of the FAC recommends that contributions be increased in shortage situations. The USA established a food-aid back-up reserve of 4 million tons of wheat to ensure a minimum flow of food aid in times of global shortage. All food-aid donors now tend to be more responsive to emergencies than they were in the past. In addition, there is increased bilateral and multilateral assistance for storage facilities and for building up national buffer stocks. At least one developing country--

India--has decided to rely primarily on a large national grain reserve. With these arrangements in place, it should be easier for developing countries to ride out global as well as local shortages.

2. Some Major Uncertainties

All projections are subject to uncertainties at every step in the analysis. For example, although an effort has been made to allow for ongoing changes in income elasticities of demand for food, it is possible that the income elasticities for livestock products which we have employed are still too low for some rapidly developing regions and too high for some affluent regions where demand is approaching satiation.

Income elasticities for food are affected by the age structure. No allowance has been made in our projections for possible increases in income elasticities resulting from the increased proportion of economically active adults in the population of developing countries.

Income elasticities are also affected by changes in income distribution, which are not considered in the projections. Poor people spend a higher proportion of any additional income on staple foods than do their more affluent compatriots. Consequently, the average income elasticity of demand for foodgrains would be significantly higher in low-income countries should the income distribution become more equal.

Another source of uncertainty is the extent to which countries in dietary transition will satisfy the increased demand for livestock products by importing meat and dairy products or by developing their own livestock industries, based on imported feedstuffs.

The greatest uncertainties stem from economic policies--which may affect the global economic climate--and from unexpected changes in national agricultural and food policies.

Faster economic growth than we have assumed would have a favorable effect on food consumption, production, and trade. For example, if economic growth should turn out to be one-half of one percentage point higher than is assumed in our projections, world demand for meat would be 8.6 percent greater and global meat imports 42 percent greater than the base-line estimates. Roughly the reverse would be true if world economic growth should be less than projected.

Even more important for agricultural trade could be the balance-of-payments effects generally associated with higher or lower economic growth rates. The projections assume that the debtor countries will work their way out of the present credit crisis and will resume their economic growth, although at slower rates than in the 1970s. Should high real interest rates and tight credit markets continue into the 1990s and the debt problems remain unresolved, many food-importing developing countries would be forced to tighten their belts further, to reduce their imports, and to try to expand their exports. This, in turn, together with slow economic growth in the developed countries, might lead the latter to raise new barriers to imports. The effects on food consumption and trade could be severe.

Agricultural and food policies can also be important, as the centrally planned countries proved in the 1970s. There is virtually no government that does not intervene extensively in its agricultural markets by means of regulation, subsidization, or protection. These policies can be changed,

with signficant effects on food production and consumption and, especially, on agricultural trade.

In general, our projections assume a high degree of inertia in national agricultural policies, except for course corrections to avert imbalances that seem politically or economically unsustainable. For the EEC, this means somewhat reduced incentives for surplus production and somewhat more effective restraints on the growth of imports of grain substitutes. The projections, nevertheless, point to further increases of EEC net exports--in the case of grains, to 20 million tons.

For the USSR, the projections anticipate a resumption of the upward trend in grain yields and continued improvements in livestock feeding efficiencies. Excepting basic reforms of the food production and distribution systems, there may nevertheless be a continuing need for grain imports of about 30 million tons. Prospects for economic policy reform, following the Hungarian model, are somewaht more favorable in Eastern Europe. To the extent that such reforms materialize, they should have favorable effects on food production and consumption and on the agricultural and overall trade balance. For the People's Republic of China, it is assumed that the recent policy reforms will remain in place. Productivity growth is, nevertheless, likely to slow down considerably in the years to come. Grain imports are projected to increase gradually, with increased meat and oilseed exports paying for part of the cost.

We assumed no basic changes are anticipated in the agricultural policies of the USA. It is assumed that the USA will stand ready to meet any increase in demand for its agricultural exports at competitive prices and that its comparatively open market will continue to act as the balance wheel of the world food system.

3. Conclusions

The prospects outlined in this paper are not likely to make headlines, although they are contrary to some popular beliefs. Effective economic demand, rather than resource constraints, will continue to be the dominant limiting factor in improving the security of world food supplies.

The global demand for food will continue to grow, but the rate of growth is declining in virtually all regions. That should ease the pressure on agricultural resources. The largest relative increases will be in the developing world, including China. Demand in the developed world, including the USSR and Eastern Europe, is leveling off because of low population growth and the approaching satiation of demand for livestock products.

All regions except Sub-Saharan Africa will meet the increased demand largely out of increased domestic production. The food trade will nevertheless continue to grow, although at a slower pace than in the 1970s. The trend of real prices of staple foods could well continue in a downward direction, but there may be large fluctuations around the trend.

In the developing countries, population growth and productivity growth will set the pace for food consumption. In most of these countries, sustained and balanced economic development will not be possible without a strong emphasis on agriculture. In low-income countries with rapidly growing populations, most of whom are employed in agriculture, major efforts to increase food production are essential if they are to escape from the vicious circle of low productivity and low purchasing power.

Increased attention to agricultural development will help to ensure that average food consumption levels will, in fact, improve in all regions,

except for continuing problems in Sub-Saharan Africa whose rapidly growing population will probably become increasingly dependent on international assistance. The greatest improvements in food consumption are projected for the North Africa/Middle East and East Asian regions which will also be the most rapidly growing export markets. The USA will continue to be the dominant supplier of grains; the USA, Brazil, and Argentina, the principal suppliers of oilseeds; Oceania, the leading supplier of meat. The EEC, already the principal exporter of dairy products, will widen its lead over Oceania in that market.

Market instability is likely to remain a serious problem, but developing countries are now better protected against balance-of-payments difficulties resulting from year-to-year variations of food supplies at home or abroad.

The dark side of this otherwise encouraging prospect is the continuing problem of chronic undernutrition among the poorest of the poor. Hunger is not likely to be eradicated, solely as a result of the projected rates of economic and agricultural production growth. In the short term, hopes for improving the nutritional status of the poor will rest on increased food assistance and employment-oriented development programs.

The enhancement of global food security or, conversely, the reduction of global food insecurity, requires multiple approaches and programs. Expansion of food production capacity in the developing countries is a necessary condition. That expansion turns importantly on public investments and appropriate incentive policies by governments of those countries. But the sufficient conditions for enhancing food security include broad economic development and broadly-shared improvement in the economic status and incomes of currently very poor people to permit them to

access more fully local and international markets for food. Even so, international (both bilateral and multilateral) food assistance programs will continue to be essential to meet the unexpected effects of an unstable world food system and to assist in meeting the food needs of millions of persons of chronically underdeveloped countries with rapidly growing population.

The needs and opportunities to enhance global food security are large. Resources are available in the world to do so. The issue is whether there is the collective global will and commitment to do so.